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AN ESSAY
ON THE
DISEASE
COMMONLY CALLED
DIABETES.

BY WILLIAM WASHINGTON,
OF ALEXANDRIA, VIRGINIA,
HONORARY MEMBER OF THE
PHILADELPHIA MEDICAL AND CHEMICAL SOCIETIES.

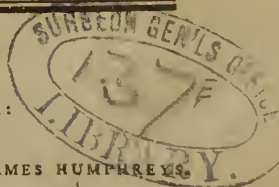
Multum egerunt qui ante nos fuerunt, sed non peregerunt;
multum adhuc restat operæ, multumq; restabit, neque ulli nato
post mille secula præcidetur, occasio aliquid adhuc adjiciendi.

SENECA.

PHILADELPHIA:

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1802.



AN
INAUGURAL DISSERTATION
FOR
THE DEGREE
OF
DOCTOR OF MEDICINE,
SUBMITTED
TO THE EXAMINATION
OF THE
REV'D. JOHN EWING, S. T. P. PROVOST,
THE
TRUSTEES, AND MEDICAL FACULTY,
OF THE
UNIVERSITY OF PENNSYLVANIA;
ON THE 27th DAY OF MAY, 1862.

406313

TO
DOCTOR JAMES CRAIK,

OF ALEXANDRIA, VIRGINIA,

THIS DISSERTATION

IS DEDICATED,

IN TESTIMONY

OF THE

RESPECT AND GRATITUDE

SO JUSTLY DUE

FROM HIS SINCERE AND AFFECTIONATE

FORMER PUPIL

THE AUTHOR.

TO
BENJAMIN RUSH, M. D.
PROFESSOR OF THE
INSTITUTES, PRACTICE,
AND OF CLINICAL MEDICINE,
IN THE
UNIVERSITY OF PENNSYLVANIA,
THIS ESSAY
IS ALSO INSCRIBED,
AS AN ASSURANCE OF MY HIGH ESTEEM FOR HIS
VIRTUES AND TALENTS,
ALSO
AS A TRIBUTE OF GRATITUDE,
FOR THE MANY MARKS OF POLITENESS CONFERRED ON
HIS MUCH OBLIGED FRIEND
THE AUTHOR.

TO ATTACK AN ERROR IS THE COMMON RIGHT
OF EVERY MAN, IN MEDICINE IT BECOMES A DUTY, AND
HE WHO IS CONSECRATED TO THE PRESERVATION OF
HIS FELLOW CITIZENS, OUGHT NOT TO FEAR TO RAISE
HIMSELF ABOVE PREJUDICES OF WHICH HE KNOWS THE
DANGER, PARTICULARLY WHEN HE CAN SUBSTITUTE
AN USEFUL TRUTH.

BLAIR.

AN

INAUGURAL DISSERTATION.

IN contemplating the variety of forms under which morbid action makes its appearance in the human body, and the consequences and effects which result from its determination to particular parts, I am induced to believe, that its attack upon no part ought to claim more of our attention than the one which will constitute the subject of the following Essay.

Although it cannot now be said to be a disease which occurs often, yet its appearance has become far more frequent than formerly. This, perhaps, has been with sufficient reason ascribed, by *Dr. Home*, to the more frequent and fashionable use of spirituous liquors at the present time, than amongst the antients;

which was in a great measure unknown to them, and is now acknowledged to be one of its most common exciting causes. It was so unusual a complaint at the time of *Galen*, that only two cases were noticed by him, and he even goes so far as to say, that it was considered almost a miracle. The disease to which I allude, has hitherto been described by most medical authors under the appellation of DIABETES, from the Greek word *Diabaino*, to *pass off* or *through*. This term, although by no means conveying an accurate idea of the disease, I shall adopt, more for the sake of conforming to custom, than from a persuasion of its propriety. Dr. *Cullen*, in his *Nosology*, has placed it in his class *Neuroses*, and order *Spasmi*, from a belief in its connection with nervous and spasmodic diseases; but the impropriety of this must be evident, as the symptoms which induced him to class it among these are not uniform, but anomalous or accidental circumstances.

The following is the definition which he has given of it; *Urinæ plerumque preternatu-*

ralis copia immodica profusio Chronica, of which he enumerates *two* species; viz. *Diabetes Mel-litus*, and *Diabetes insipidus*; but as I am well convinced, that no real benefit can be derived from this division, I shall include them both under one head, believing them, as I hope to prove hereafter, to be always the effect of one cause; and owing solely to a morbid or irregular action in the whole sanguiferous system, accompanied with a local determination to the kidneys.

There is scarcely any disease which has been looked upon in a more incurable light, or as being one more fatal in its termination. This was particularly observed by the illustrious *Cullen*, who, when treating of it, expressly says, “that out of twenty patients under his care “not one of them recovered.” This circumstance, as well as many others, induced me to make it the subject of my Dissertation, as I hope to deliver a Theory of it, which will lead to a more successful mode of treatment than it has heretofore met with, and reduce it as much under the power of medicine as any

other disease. Before I proceed, it may be thought necessary that I should first declare, from whom this Theory was derived.

In doing this, I feel a pleasure in acknowledging, that it was taught by the Professor of the Institutes of Medicine in this University, who, in his Pathological Lectures informs his pupils, that he had long wished for a satisfactory Theory of its production, and had thought much on the subject; but was at last forced to resort to the unity of disease for its explanation, and since adoption, it has been supported by the success attending the practice founded upon it. Persons of every age and sex appear to be subject to it, but it most frequently attacks those who are in an advanced stage of life. In pursuing this subject, I shall, *first*, give a general account of the symptoms with which it is accompanied; *secondly*, the different kinds of urine secreted; *thirdly*, the causes which usually bring it on; and, *lastly*, the proximate cause, under which head I shall consider some of the most plausible opinions which have been advanced to explain it.

HISTORY OF THE SYMPTOMS.

THE Symptoms which usually point out the existence of DIABETES, are a frequent discharge of an uncommonly large quantity of pale and colourless urine; much greater than the quantity of liquids taken in; excessive thirst, which is often so uncommon as that several gallons of drink are required, and taken in, in the course of a day; pain in the region of the kidneys, with a retraction of one or both testicles, accompanied with a pain extending along the thigh; costiveness; a voracious appetite has been said by some authors, to be a constant attendant in this disease, from its commencement, others again take no notice of it; pains in different parts of the body, and particularly in the head, are not unfrequent; a white and furred tongue; flushed countenance; inflammation and swelling of the gums, putting on that appearance which they assume when under the influence of mercury, with a frequent

spitting of thin watery saliva; a hot and dry skin; a feeling harsh to the touch; excoriation and swelling of the prepuce of the penis, and a discharge of blood along with the urine often happens; strictures in the urethra likewise sometimes occur. These, together with a full, quick and tense pulse, are among the most prominent symptoms with which it is accompanied. In the course of the disease, however, the patient, in consequence of the excessive discharge, becomes emaciated, and extremely feeble; the feet and legs become œdematous; and when it proves fatal, these symptoms are observed to become more violent.

The quality of the urine voided is not always alike. Many cases are related, where no perceptible difference from that of its natural state could be discovered; but in a majority of instances it is possessed of a sweet taste, which has been compared to a mixture of honey and water. This has been said to be uniformly the case, and to be a certain characteristic of the disease; but very improperly, for we have many cases recorded, where it could not be

perceived at any period of the complaint; and others, where it disappeared in its course several times, although the quantity of urine discharged was not at all diminished, nor could the existence of the disease be doubted. Dr. *Cullen* relates a case in which it was perfectly insipid. The quantity voided varies in different patients; in most cases where adults have the disease, from ten to twelve pints is generally made in a day, but we have authority for asserting that it often much exceeds that quantity. *Cardanus* gives an account of one who discharged *thirty-six pints* every day for several months. It appears to be increased in proportion to the increased violence of the foregoing symptoms. By evaporation a saccharine extract has been obtained; from two pounds of Captain *Meredith's* urine were afforded two ounces of this matter, which distilled with nitrous, was converted into the oxalic acid. In the experiments of Dr. *Dobson* we observe, that when it was preserved in an open vessel, it passed through the *vinous*, *acetous* and *putrefactive* fermentations, from which we are convinced of the presence of saccharine matter.

REMOTE CAUSES.

WITHOUT entering into a disquisition on the manner in which the remote causes act in producing Diabetes, I shall content myself with the bare enumeration of them. They appear to be nearly the same which generally excite other febrile diseases. The following are the most common; to wit, the intemperate use of spirituous liquors; acid drinks; large quantities of water; excess in eating; alternate heat and cold; great fatigue from much bodily exercise; the too frequent use of diuretic medicines. Dr. *Willis* mentions a case which was brought on by Rhenish wine, which ended fatally in twenty days. Dr. *Cullen* was of opinion, that it was frequently excited by calculi in the kidneys, from its attacking persons subject to calculous complaints. The healing of an old ulcer has produced it. This was observed by Dr. *Sydenham*, who also says, that it often succeeded intermitting fevers. It

is often connected with gout. Medicines acting as sedatives, and the debilitating passions of the mind.

PROXIMATE CAUSE.

HAVING briefly stated the symptoms of this disease, and the causes by which it is usually brought on, I shall now take up the consideration of some of the opinions which have been advanced by different authors to explain it. Many of them may with truth be said to be as visionary and hypothetical, as the opinion of *Paracelsus* respecting the composition of the human body, which he imagined to be Salt, Sulphur, and Mercury. To notice them all would be unnecessary; as many of them are, in consequence of the present improved state of medicine, entirely exploded, and it would necessarily extend this Essay far

beyond its intended limits. I shall therefore only consider such as have attracted most attention, and have been most accredited. In the first place, that advanced by the ingenious *Darwin*, who has ascribed its phenomena to a retrograde motion in a certain set of lymphatics, which, he endeavours to prove, form a communication between the stomach and bladder, is the most prominent and worthy of notice. He accounts for it in the following manner, by first assuming it as a fact, that the great quantity of urine made after drinking largely of water, or spirituous liquors, is owing to the urinary branch of absorbents, which anastomose with the lacteals of the intestines, inverting their motions, and by that means conveying it directly to the bladder, which, if repeated often, at length gains an habit of doing it, and the chyle, by that means, is carried directly to the bladder, without entering the circulation. This explanation, although it has the usual ingenuity of the author attached to it, does not, in my opinion, coincide with the symptoms of the disease, and before we can admit it, the existence of these

lymphatics should be proved to a demonstration, and their power of taking on a retrograde motion, should be established by facts and experiments. In support of this, the Doctor has brought forward the experiments of Mr. *Charles Darwin* and Doctor *Kratzenteen*, which he considers the very pillars of its support. The circumstance of these being doubted by some, and even said to be proved erroneous by later experiments, was sufficient to excite a suspicion in my mind. I accordingly determined to repeat them exactly in the same manner that they are related. This was done, not because I pretend to doubt the veracity of the persons by whom they were made, but from a conviction of the fallacy, or rather uncertainty of experiment in many things, and well knowing, how liable we are to be deceived. Of this liability to error every candid person must be sensible. Scepticism and incredulity in medicine ought therefore to be admitted and rather admired than reproached. The duty we owe our fellow-citizens renders this absolutely necessary. The result of these experiments as performed by myself, I shall now

give in full, from which the reader may draw his own conclusions. The first was conducted in the following manner: After having made a tolerable hearty dinner on roast beef and potatoes together with asparagus, I prepared a sufficiency of *punch* for the purpose of the experiment, of which I drank until I began to feel intoxicated; I then dissolved three drachms of nitre in about half a pint of the punch, all of which I drank at repeated draughts: In the course of three hours I voided nearly three pints of pale colourless urine, into which I immersed several sheets of filtering paper. It was then put into the shade to dry, and after it had become so, one or two of them were burnt, but shewed no evidences of the presence of nitre. Some gentlemen present observed, that they thought they heard something like detonation, but this they were afterwards convinced, was nothing more than that which always accompanies the combustion of paper, which had been previously wetted and afterwards dried: However, to be certain on this point, we burnt at the same time, paper which had been dipped in urine made before the commencement of the

experiment, and, there was no kind of difference in the result. In this opinion the gentlemen present coincided. Not being disposed however, to make up my mind from a single experiment, I resolved to try it again, and my friend Mr. *Hartshorne* was so obliging, as to be the subject of its repetition. We conducted it in every respect like the former, except, that he drank *wine* instead of *punch*. It operated much sooner on him than it did on myself, and he discharged a larger quantity of urine in a shorter time. We treated it in the same way as we did the former; but there appeared no circumstance whatever which could induce us to think, that it contained any nitre. A portion of it was afterwards evaporated by Mr. *Hartshorne*, and he informed me, he could not detect any in it. Finding from these experiments, that the opinion of a direct communication between the stomach and bladder was extremely improbable, I determined to repeat the one related by Doctor *Kratzenteen* in the Philosophical Transactions of *London*, from which Dr. *Darwin's* Theory has been supposed to derive additional support; this was the

tyeing up of the ureters of a dog, which dog continued to discharge urine notwithstanding. With the assistance of my friend Dr. *Jacobs*, I tied up the ureters of a bitch, at about half after ten o'clock in the morning, and pressed out what urine was in the bladder; water was then given her, of which she drank plentifully, but eat nothing of any consequence. I watched her attentively for eight hours, and during that time she did not void one drop. It being then very late in the evening, and inconvenient to attend to her, it struck me, that if a ligature was put on the urethra, I should ascertain it to a certainty in the morning, by examining the bladder; but finding it inconvenient to get at the urethra, I tied up the mouth of the vagina, and left her until the next day; when I found her in appearance as well as she was when I left her. I then killed her, and upon examining the bladder, it was found quite empty and contracted; the ureters were well secured, and distended to nearly double their natural size; the vagina and uterus were also examined, but they contained no urine. On cutting into the kidneys a quantity issued out, and they appeared in some degree inflamed.

From these experiments I think we may be warranted in asserting, that the notion of a direct communication from the stomach to the bladder, is erroneous, and that it has nothing but the high authority from which it comes to recommend it; consequently, the explanation of Diabetes, cannot be accounted for upon this principle. But even admitting it, we shall find ourselves as much at a loss as ever. How shall we account for many of its symptoms? Why should the kidneys be in every instance affected? That they are is undeniable; for one of the most prominent symptoms with which it is attended, is a constant pain in the region where they are situated. Pain is not the only proof we have of their being diseased; it is sufficiently evinced by the dissection of persons who have died of the complaint. The kidneys of the patient dissected by Dr. *Home*, were found preternaturally enlarged; and many other cases are recorded, which I shall relate in a subsequent part of this Essay. The analogy also between many of its symptoms, and those which accompany other diseases of the kidneys, adds additional support to the opi-

nion of their being affected in Diabetes. Do not authors describe a retraction of one or both testicles, and a pain extending along the thigh, as accompanying calculous affections of the kidneys? They do;...and we have the same mentioned as attending Diabetes. They occurred in one of Dr. *Rollo's* patients. Its affecting those persons subject to the gout, which often attacks the kidneys, and frequently succeeding a fit of Nephritis, would at least render it probable, if there was no other circumstance in proof of it. *Mead* mentions a case which succeeded a fit of Nephritis in a Mr. *Bullichius*, the chief magistrate of *Copenhagen*, who was subject for many years to a periodical Diabetes, which returned every month after a severe nephritic fit, at or near a full moon, when he made twenty-four pounds of urine, although he had not drank a pint. It is also admitted by Doctor *Cullen*, to be sometimes connected with calculous complaints, and calculi have actually been found in the kidneys of those who have died of this complaint.*

* Sepulchret. Anat. BONETI.

A more conclusive proof, however, of the insufficiency of the explanation of this disease, upon the principle of a communication from the stomach to the bladder, may be drawn from the following circumstance; viz. the discovery of saccharine matter in the kidneys: In proof of this we have the authority of Dr. *Home* and Dr. *Munroe*, who were both induced to think so, from a sour odour being emitted from the kidneys of the patient before quoted, which must have been the consequence of its being in a state of acetous fermentation: This was also noticed by *Vanfweten*. He also observes, that particular pains were taken to see if any lymphatics could be discovered about the neck of the bladder, but there were none to be found. I might now go on to enumerate a number of other facts in opposition to the Doctor's opinion, which supposes, that the absorbents possess the power of taking on a retrograde action, even admitting those of the bladder anastomosed with those of the intestines and stomach, but as this part of the subject was very handsomely combated, and I

think successfully refuted by Dr. *Bibb*, in his inaugural dissertation, published last year,* I shall pass over it unnoticed. I will, however, mention an experiment made by Dr. *Jacobs*, some time in the course of the last winter. This was, an attempt to inject the lacteals of the intestines of a young woman with mercury who died suddenly, and in whom they appeared very evident: In every attempt to force it in a contrary direction to their natural course, the resistance given by the valves was so great, that the lymphatics were ruptured. My friend, Mr. *Grimes*, also informs me, that he found it impossible to force the chyle in the lacteals of a dog in a direction contrary to its natural course.

Presuming, therefore, that these experiments and facts are sufficient to refute Doctor *Darwin's* opinion of this disease, I shall proceed to the consideration of the opinion of Doctors *Cullen* and *Dobson*, which supposes it to depend upon a defective state of the assimi-

* Vide Dr. *Bibb's* Inaugural Dissertation on the Modus Operandi of medicines.

latory powers, or those powers employed in converting alimentary matters into the proper animal fluids. The principal reasons that induced them to take up this opinion were drawn from the following circumstances; first, the difficulty of supposing, that the secretory vessels of the kidneys could take on such an action as to secrete urine possessed of saccharine properties; secondly, the diseased state of the stomach which sometimes accompanies it; and lastly, a sweet taste in the serum of the blood. With respect to the first, we can see no difficulty in accounting for it. It is well known, that by some mysterious law in the animal œconomy, morbid action sometimes terminates in effusion, or secretion of one substance, and sometimes another. Morbid action in the liver is often followed by the secretion of green, black, and acrid bile; in the bowels, thin, watery, and inodorous stools; in the salivary glands, thin, watery saliva; in the joints, chalk stones or calcarious matter; in bones, boney matter; and in soft parts, pus, which often differs in its properties. The gonorrhœal discharge, from being stopped frequently, produces a similar secretion from the glands about the eyes, and the

menstrual secretion has been performed by the stomach, nose, and breasts. From these circumstances we may with equal propriety infer, that a gland may not only secrete a fluid, when labouring under disease, different from which it does in health, but it may also take on the secretion of another gland, and therefore, why may we not suppose, that the kidneys are possessed of the same power of having its secretions so altered, as to produce a fluid of a saccharine nature? To suppose that chyle could enter the blood-vessels without being properly prepared, and circulated through the whole sanguiferous system, would be unphilosophical, and incompatible with the laws of the animal œconomy. If death is produced by the injection of a few drachms of simple water, or pus, into the blood-vessels, is it reasonable to suppose, that such a large quantity of saccharine matter as is generally secreted by the kidneys, could exist in them without being followed by the same fatal consequences? no; certainly not. The knowledge we now possess of the absorbent system renders it pretty certain, that they do not take up any thing but what is properly assimilated. But even

admitting, that the chyle entered the blood-vessels without being properly assimilated, would it not be robbing the kidneys of one of the most essential prerogatives belonging to all glands, to suppose, that a fluid could pass through them without being altered in its properties? The serum of the blood and urine secreted, both in health and disease, are by no means alike, whereas, if the vessels of kidneys were intended for no other purpose than that of a simple strainer, both of them ought to be of the same nature. The urine of a patient afflicted with Diabetes does not coagulate when exposed to heat, but the serum of the blood does, which I think proves, that it has undergone some change in passing through the kidneys. As to the serum of the blood being found sweet by Dr. *Dobson*, I am disposed to think, he must have been deceived by some circumstance or other; probably the sense of taste (the fallacy of which none of us can be ignorant of) was the cause, from its not being found so by later observations. Dr. *Home* says, that the blood of both his patients was not sweet, although as much as two ounces of saccharine matter were obtained from thirty-six

of urine voided by one of them; is it therefore reasonable to suppose, that so large a quantity could have existed formally in the blood, and not be discovered by the taste? however, without persisting on this point, I shall proceed, to deliver the Theory of this disease which I have adopted, as it can be no objection to it, even admitting the chyle was carried into the circulation, without being properly prepared.

This, according to Doctor *Rush*, consists in a morbid or irregular action in the whole sanguiferous system, or in other words, it is a state of fever accompanied with a local determination to the kidneys. This is evinced by its being attended with all those symptoms which are usually the consequence of other febrile states of the system; viz. pain, increased action in the pulse, thirst, increase of heat, and a flushed countenance. These are all inseparable from it, and it must be acknowledged that they are the effects of febrile action. Dr. *Rush* describes the pulse as being full, tense, and quick, in those patients which he attended; and Dr. *Richter*, as being small, tense, irritated, and quick. *P. D.*'s. pulse,

Dr. *Dobson's* patient, was, at irregular intervals, up to one hundred and fifteen, and one hundred and twenty strokes in a minute. In one of Dr. *Rollo's* patients it was at times one hundred and four in a minute. We judge it to be a state of fever, likewise, from the appearance of the blood, which, is generally fizy, and with an inflammatory crust on the top;* Doctor *Home* also describes the same appearance, and Doctors *Rollo* and *Dobson* furnish two others in proof of it. I infer, also, that it is the effect of febrile action from the causes which produce it, being the same which produce other states of fever; viz. intemperance in eating and drinking; vicissitudes of the weather; and many more which it would be unnecessary again to mention; and likewise, from its attacking those constitutions most liable to fever. This opinion is also confirmed by dissection. The kidneys of the patient before related discovered every mark of excessive action; they were preternaturally enlarged, and much softer in their texture than usual. Mr. *Cruikshank* also observed the same; he found

* *Russ's* M. L.

the minute cryptæ which secrete the urine particularly so. The diseased state of the kidneys is also farther confirmed by the following quotation from a letter, written by Dr. *Bailey* to Doctor *Rollo*. These are his words, “ I have
 “ examined not only the state of the kidneys,
 “ but of the stomach; the intestines, the
 “ glands of the mesentery, the liver, spleen,
 “ and pancreas, and I do not hesitate to men-
 “ tion to you, generally, that I was induced
 “ to believe from the morbid appearances in
 “ the kidneys, that the principal seat of the
 “ disease was in them.” The excessive dis-
 charges of sweat and saliva, and the secretion
 of urine being increased in proportion to the
 increased violence of its symptoms, affords ad-
 ditional proof of it, I infer it also, from its
 being frequently attended with dropfical symp-
 toms, which are nineteen times in twenty the
 effect of fever. This opinion does not rest
 upon these facts alone. The success attending
 the practice founded upon it, also adds additi-
 onal confirmation of it, proofs of which I shall
 adduce, when treating of the method of cure.

METHOD OF CURE.

FROM the view we have taken of the proximate cause of this disease; the indications of cure must be evident. As we have said that it consists in an excess, or rather a morbid action in the whole sanguiferous system, with a local determination to the kidneys; the first step to be taken should be to attempt its removal, which may be done by any of the several modes of depletion; in the first place, blood-letting, which should be regulated, by the degree of action in the pulse, and other symptoms: Then emetics should be exhibited;...these may be either Tart. Emetic, Ipecacuanha, or *Turpeth Mineral*, which last I should prefer, as two advantages would probably be derived from it; first, its action on the stomach as an emetic, and secondly, that of producing a salivation, which often follows its use when given simply

for the purpose of evacuating the contents of the stomach. After the febrile symptoms are in some degree subdued, mercury should be given so as to excite a salivation. Dr. *Rush* informs his pupils, that by these remedies two patients have been cured, and a third was considerably relieved by them, and although he is now subject to returns of it, he always finds himself much benefitted by the abstraction of a few ounces of blood; as a farther testimony of the propriety of blood-letting we have the authority of *Burserius*. Capt. *M.* a patient of Doctor *Rollo's*, was also very much relieved by the abstraction of a few ounces, which were taken with a view to ascertain whether the blood was sweet; probably, had it been repeated, he would have recovered much sooner than he did. Mr. *Scott*, in a letter to Sir *Joseph Banks*, says, he has seen but two cases of Diabetes, both of which were cured by mercury; one of them afterwards relapsed, but was again cured by the nitric acid, which produced a state of the mouth similar to that produced by mercury. A friend of mine likewise informs me, that his preceptor cured a little girl, eight

years old, of this disease, by means of salivation. These remedies have been used with equal success in the Alms-house, and at the Dispensary, as I am informed, by gentlemen now residing at both those places. Medicines exciting perspiration have been used with considerable advantage; for this purpose *Dover's* powder may be used in the usual way; one case is mentioned in the *Med. Com.* as having been removed by it. Fish Oil anointed on the skin is said to be used with advantage in Scotland; it is used with a view of preventing absorption from the surface of the body, but I am inclined to think, that it does not produce its effects in this way, for from the experiments of *Dr. Rosséau*, we are led to believe, that absorption from the surface never happens. *Dr. Russ* thinks it has a kind of sedative power. The Sac. Sat. was highly recommended by *Etmuller*, and from its power over the pulse, I should suppose it a valuable medicine in this disease. For taking off the determination to the kidneys, issues or setons may be made on the lumbar region. After the febrile symptoms are removed, tonics should be exhibited; for

this purpose, allum whey has been used with most benefit. With this I shall close this imperfect Essay; it now remains for me, to return my most sincere thanks to each of the Professors of this University, for their politeness, and the valuable information received from them.

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